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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY/DOCKET NO.
08/900,254	07/25/97	PFEDTTER	22/487-550

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YAO, S	EXAMINER
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ART UNIT 1/33	PAPER NUMBER
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06/09/98

DATE MAILED:

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/900,254

Applicant(s)

Pfeuffer

Examiner

Yao

Group Art Unit

1733

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☒ Responsive to communication(s) filed on 4/20/98.
- ☐ This action is **FINAL**.
- ☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☒ Claim(s) 1-7 is/are pending in the application.
- Of the above claim(s) 5-7 is/are withdrawn from consideration.
- ☐ Claim(s) is/are allowed.
- ☒ Claim(s) 1-4 is/are rejected.
- ☐ Claim(s) is/are objected to.
- ☐ Claim(s) are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
- ☐ received in Application No. (Series Code/Serial Number) _____.
- ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____.

Attachment(s)

- ☒ Information Disclosure Statement(s), PTO-1449, Paper No(s) 1
- ☒ Notice of References Cited, PTO-892
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

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Election/Restriction

1. Applicant's election without traverse of Group I (claims 1-4) in Paper No. 5 is acknowledged.
2. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 is indefinite because the limitations "the non-woven fabric" and "the filter material" do not have a proper antecedent basis. It is unclear how the "non-woven fabric" and "filter material" are formed and how they are related to the bonded fibrous. For the purpose of examining this claim, it is assumed that the "non-woven fabric" and the "filter material" are both directed to a bonded fibrous web having the profile of the profiled calender rolls.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamura et al (US 4,259,096) in view of Norton (US 2,862,542) and (Shinjou et al (US 4,728,394) or Schultheiss et al (US 4,180,611).

Nakamura et al, directed to forming a filter element, discloses the filter element (8) comprises a corrugated filter medium (13) for cleaning air, wherein the filter medium can either be a paper or nonwoven fabric made from a mixture of either rayon or vinylon fibers and undrawn polyester fibers (col. 2 lines 46-60; col. 4 lines 31-52; figure 2). Though not expressly disclosed, the rayon or vinylon fibers are taken to be drawn synthetic fibers. In any event, such would have been obvious in the art forming the filter element of Nakamura et al to form a drawn rayon or vinylon fiber because such is a common practice in the art of making fibers.

Nakamura et al do not teach how the corrugated filter medium is formed. In particular, they are silent on calendering a fibrous web comprising the drawn and undrawn synthetic fibers using a profiled calender rolls to bond the fibrous web. However, it would have been obvious in

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the art to calender a fibrous web comprising the drawn and undrawn synthetic fibers using a profiled calender rolls to bond the fibrous web in forming the corrugated filter medium of Nakamura et al because a) it is old in the art of making filters to calender a fibrous web comprising drawn and undrawn synthetic fibers in bonding the fibrous web as taught for example by Shinjou et al (example 1) or Schultheiss et al (example 1); b) Nakamura et al suggest heat-pressing the filter media to soften the undrawn synthetic fibers to bond the filter media (col. 4 lines 31-46); and Norton teaches calendering a fibrous web using a pair of profiled calender rollers to form a corrugated filter medium (col. 1-26; figures 1-2).

Though not expressly taught, since the method recited in this claim is indistinguishable to the method taught by the art of record (i.e. appears to be identical), it is reasonably taken that the calendering of the fibrous web, using a pair of profiled calender rolls, bonds the fibrous web in a tension-free manner, without inhomogeneities over the cross-section of the cross-section of the fibrous web and without the use of flat bonding.

Lastly, Nakamura et al do not teach forming spacers in the filter medium. However, such would have been obvious in the art making the filter medium of Nakamura because it is a common practice in the art to provide spacers in the filter medium in order to maintain air gap in the filter medium and/or to properly position the filter medium.

With respect to claims 2-4, the teachings of the art of record taken collectively would have suggested to one in the art to heat the fibrous web comprising drawn and undrawn fibers at a temperature sufficient to soften/melt the undrawn fibers in order for the undrawn fibers to

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function as binder fibers. In other words, during a calendering operation (whether heated or cooled calender rollers are used), one in the art would have ensured that, the fibrous web is sufficiently hot so that the undrawn fibers are soften/melted to effectively bond the fibrous web. Therefore, it would have been obvious in the art to perform either one of the three alternative methods of calendering the fibrous web recited in these claims in forming the corrugated filter medium of Nakamura et al because only the expected result of sufficiently softening/melting the undrawn fibers to effectively bond the fibrous web would have been achieved in performing either one of the three alternative methods and because one in the art would have chosen one from among a very limited effective and known methods of calendering the fibrous web to successfully form the fibrous web into a corrugated filter using a pair of profiled calender rollers.


Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
7. Wells (US 2,103,572) is cited as a reference of interest a filter device with a plurality of spacers.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Sam Chuan Yao** whose telephone number is (703) 308-4788. The examiner can normally be reached on Monday-Thursday from 8:00 AM-5:30 PM. The examiner can also be reached on alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mike Ball, can be reached on (703) 308-2058. The **fax number** in Group Art Unit 1733 for any official papers (i.e. papers that will be entered as part of the file wrapper) is (703) 305-7718 and for unofficial papers (e.g. proposed amendments) is (703) 305-7115.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0651.


Sam Chuan Yao
Patent Examiner
Art Unit 1733

scy
June 4, 1998